
Studies in the Capparaceae XXVI. *Capparis bonifaziana*, a New Species and Western Ecuadorian Sister to the Mostly Amazonian *C. macrophylla*

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ABSTRACT. From subgenus *Capparidastrum* s.l. (Capparaceae), *Capparis bonifaziana*, a small to medium-sized tree endemic to the western, Pacific slope of Ecuador, is newly described as an allopatric segregate of the much more widespread but rare *C. macrophylla* s. str., of the mountains and valleys of the northern Andes to the tropical lowlands of western and southwestern Amazonia. The new species differs by its more conspicuous and larger episepalous glands, smaller anthers, ovaries, and erect petals; smaller number of stamens; elliptic to oblong, rather than broadly ovate leaves; and longer and narrower baccate fruits. Both taxa are described, compared, illustrated, mapped, and with all their known specimens listed.

RESUMEN. *Capparis bonifaziana*, del subg. *Capparidastrum*, s.l., Capparaceae, es una nueva especie alopatrica, de arbolillo o árbol principalmente endémico del occidente de Ecuador, segregada de la infrecuente *C. macrophylla*, s. str., ampliamente distribuida desde las montañas y valles al norte de los Andes hasta las tierras bajas tropicales adyacentes de la Amazonía occidental y suroccidental. Esta nueva especie difiere por sus glándulas episépalas grandes y conspicuas; anteras, ovarios y pétalos erectos de menores dimensiones; menor número de estambres; hojas mayormente elípticas a oblongas antes que amplio ovadas; y frutos abayados más largos y angostos. Ambos taxones son descritos, comparados, ilustrados y mapeados, con todos los especímenes conocidos citados.

Key words: allopatric speciation, Capparaceae, *Capparidastrum*, *Capparis*, edible fruits, endemic, western Ecuador.

of the Andes, from Venezuela to Bolivia, there grow several taxa of *Capparis* subg. *Capparidastrum* (DC.) Eichler s.l., Capparaceae (Eichler, 1865), which are characterized by (1) pepo-like or baccate, spherical to cylindrical, pendent fruits with an exocarp that is indehiscent, thick and decomposing to tardily and partially dehiscent, by 3 to 4 thinly coriaceous valves (only in *C. macrophylla*), with the many seeds immersed in fleshy pulp and/or sarco-testa; (2) racemose flowers on stiff, long, basally naked peduncles; (3) massive, fleshy calyx glands, which, sitting diagonally on top of the inside basal half of each of the sepals, strongly force the latter to reflex and so partially cover and even obscure them to a greater or lesser degree; and by (4) usually glabrous leaves of often uneven sizes, on pulvinate petioles of variable length.

Involved here are: (1) the widespread, northern Peruvian-Ecuadorian, spherical-fruited *Capparis petiolaris* Kunth, including its xeromorphic, often pubescent, narrow-leaved Peruvian ecotype, *C. prisca* J. F. Macbride, with which it thoroughly intergrades; (2) *C. coimbrana* X. Cornejo & Iltis, an allopatric Bolivian sister species of *C. petiolaris*, which mainly differs from the former by its oblongoid, edible fruits and higher number of lateral veins (Cornejo & Iltis, 2005); (3) the Peruvian *C. sprucei* Eichler, locally endemic to the arid lowlands along the Río Huallaga from Tarapotó south to the small village of Cuzco in the province of San Martín, this an extreme xerophyte with strongly coriaceous, orbicular to broadly ovate leaves; (4) a new, highly local endemic from the Río Nechi headwaters in Antioquia, northwestern Colombia (Cornejo & Iltis, in prep.); (5) the rare local *C. cuatrecasana* Dugand from Bogotá in the Colombian Andes; (6) the uncommon *C. macrophylla* Kunth s.

In the forested tropical lowlands on either side

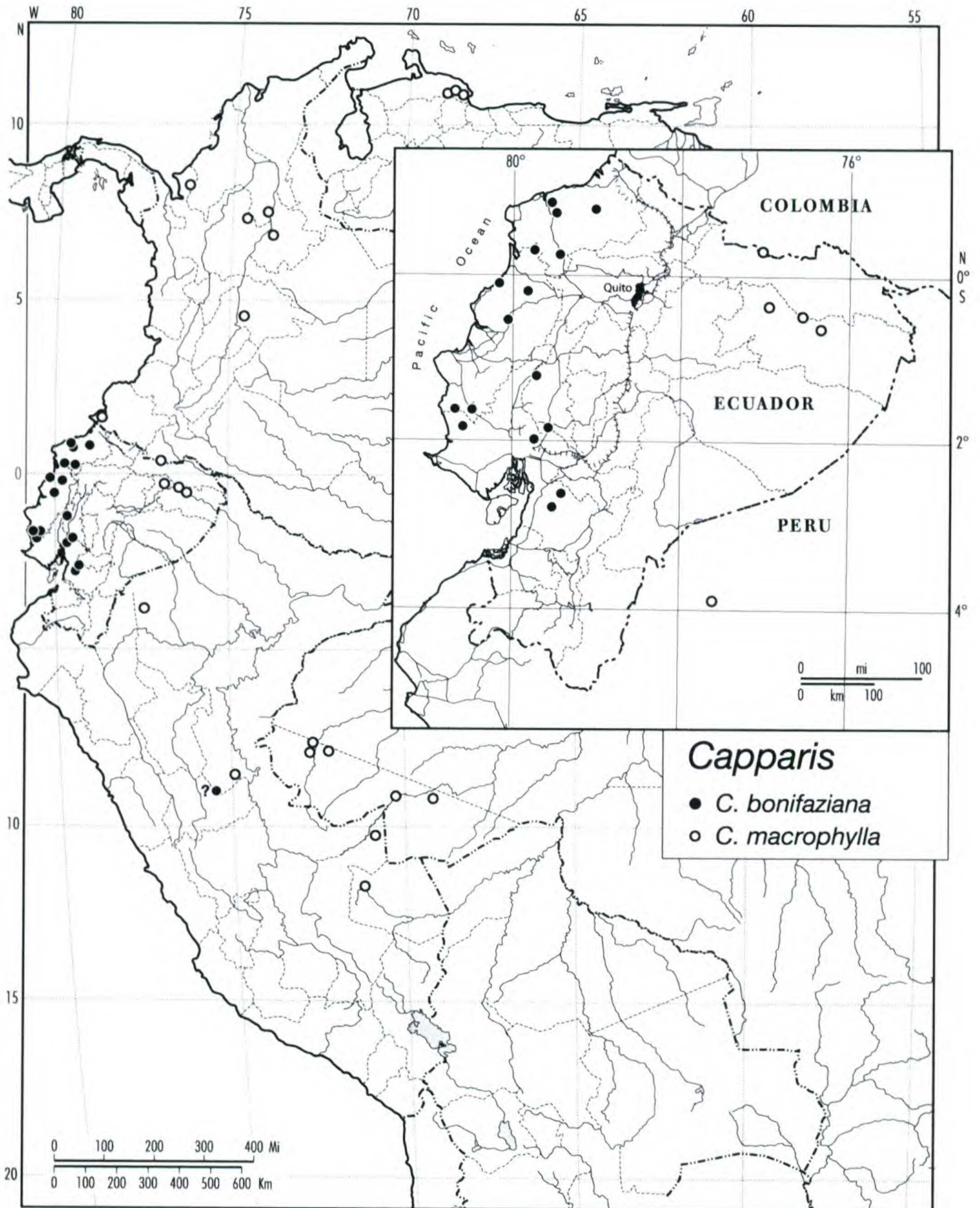


Figure 1. Distribution of *Capparis bonifaziana* X. Cornejo & Iltis (solid dots) and *C. macrophylla* (hollow dots), their ranges separated by the Andes (the isolated dot of *C. bonifaziana* in southern Peru is discussed at end of its specimen citations).

str. (Figs. 1, 3), a complex species that in one form or another ranges sporadically along the Andean arc, mostly in tropical inter-Andean valleys in the north and western Amazonia to the south in a narrow belt just east of the Andes, from northern Venezuela (incl. *C. iltisiana* T. Ruiz) and Colombia (*C. macrophylla* s. str.) to Acre in southwestern Bra-

zil (incl. *C. magnifica* Gilg), and is characterized by often giant, broadly ovate to ovate-lanceolate leaves and oblongoid fruits; and finally, (7) the new species *C. bonifaziana* (Figs. 1, 2) an allopatric, Ecuadorian segregate of *C. macrophylla*, the subject of this paper.

Capparis macrophylla s.l. has been problematic

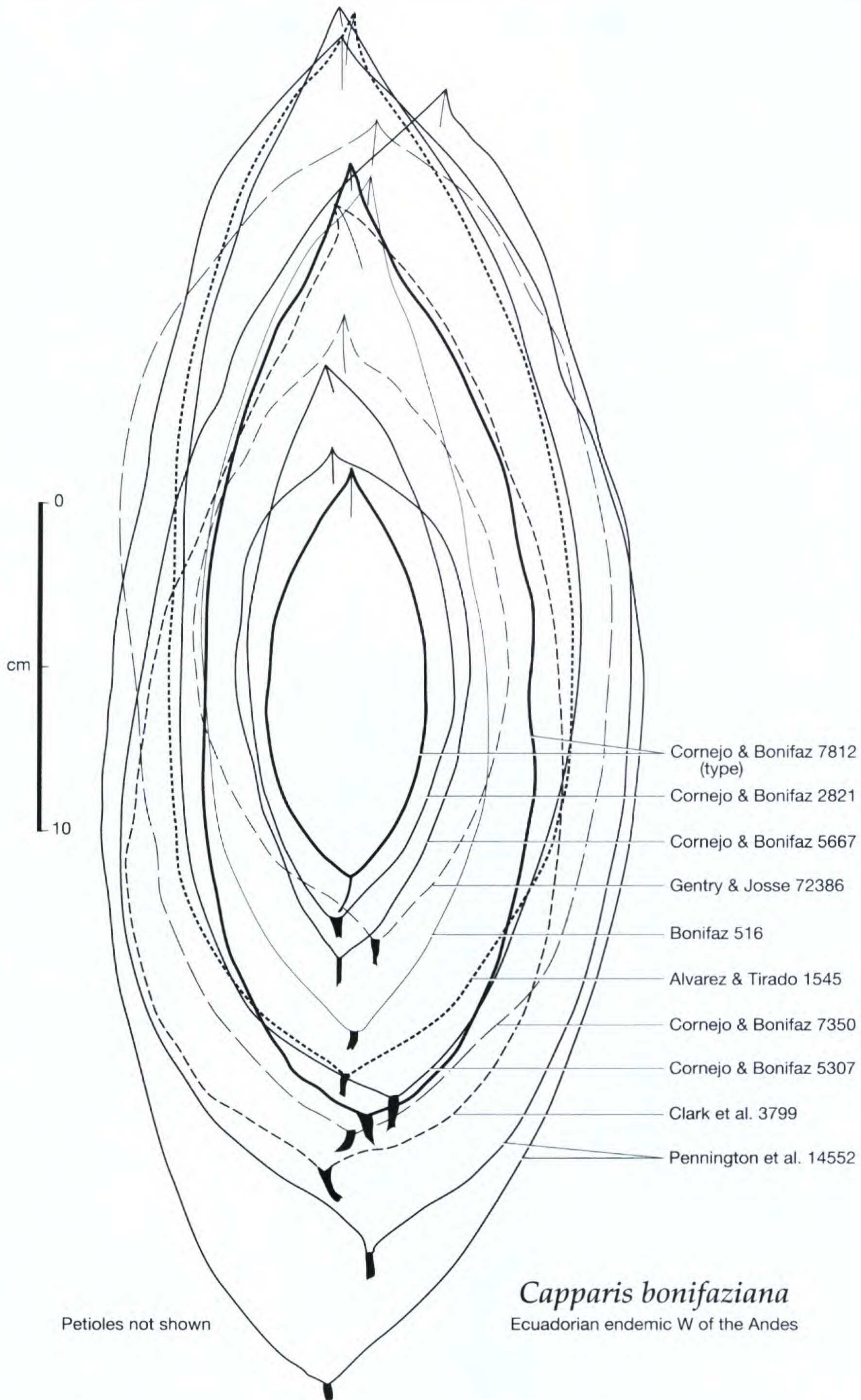


Figure 2. *Capparis bonifaziana*. Outlines of leaves of 10 collections (petioles shown).

for a long time, partly because of the confusion caused by the fact that its name had been sometimes misapplied to the widespread but distantly related *C. frondosa* Jacquin (*C. baducca* L.; Dugand, 1955: 108; Ruíz-Zapata & Iltis, 1998: 140),

and, steadily since the 1890s, to the common, more closely related, smaller-flowered and much smaller-fruited *C. osmantha* Diels (incl. *C. guaguaensis* Steyermark) of mostly the tropical Amazonian forests east of the Andes. This species, in turn, is

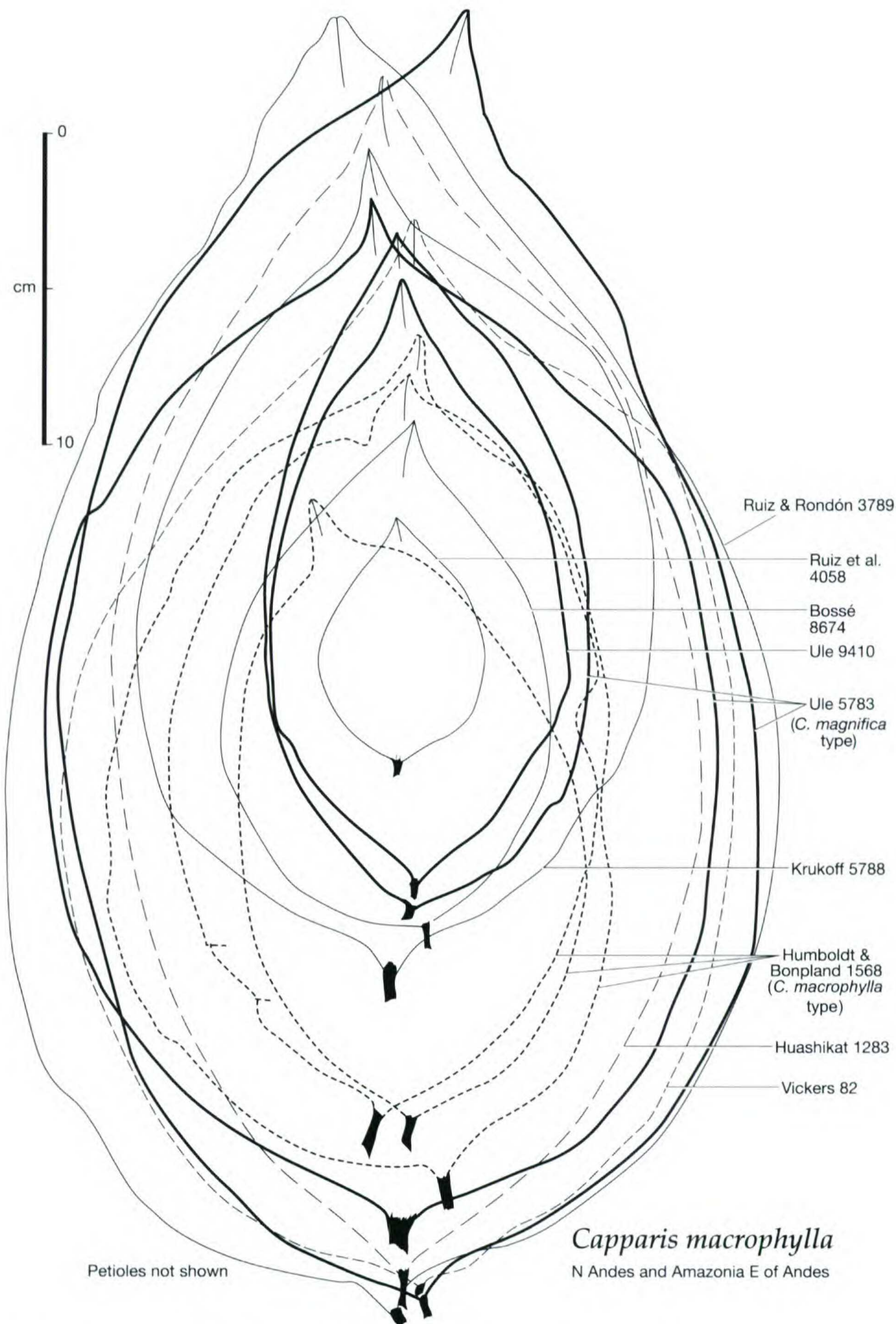


Figure 3. *Capparis macrophylla*. Outlines of leaves of 10 collections (petioles not shown).

more closely related to a Mexican–Mesoamerican alliance (Iltis, 2001; Ruíz-Zapata & Iltis, 1998) composed of *C. discolor* J. D. Smith (incl. *C. tuerkheimii* J. D. Smith and *C. uniflora* Woodson), *C. quiriguensis* Standley, and *C. mollicella* Standley

(incl. *C. lankasterii* Standley), and, in Colombia, *C. cuatrecasana* Dugand.

The type specimen of *Capparis macrophylla* (Humboldt & Bonpland 1568, P), consisting of three leaves (cf. Fig. 3) and one flower, is not very

revealing, since these resemble leaves and flowers of some of the other taxa listed above, while the original description, based in part on Bonpland's field notes (Kunth, 1821: 91), is more helpful. In any case, since material of *C. macrophylla* from Colombia is often incomplete, the need for more ample collections, especially from the southwest of the country, is critical. Unfortunately, the fully mature, soft fruits of most of these species, but especially of *C. macrophylla*, are uncommonly collected by botanists, attractive as they are to animals and to humans who also like to eat them, and they are furthermore, much as bananas, difficult to dry and preserve. Finally, fruit size varies enormously within most species, both clinally, depending on the regional or local climate, and individually, depending on the vigor of the plant (Ruíz-Zapata & Iltis, 1998; Iltis, 2001).

Nevertheless, in preparing a treatment of Capparaceae for the *Flora of Ecuador*, and utilizing the large number of splendid specimens recently collected there, our study of all *Capparis macrophylla* collections made it abundantly clear that these could be separated on leaf shape alone into two allopatric taxa divisible by the Andes (Figs. 2, 3): narrowly oblong-lanceolate to oblong-elliptic, and acute to obtuse, from the relatively drier western Pacific lowlands, and broadly elliptic to ovate, and acuminate to short-acuminate, from the much wetter Amazonian lowlands just east of the Andes, with the latter populations matching closely in their leaf-outlines the leaves of the *C. macrophylla* type specimen from the Colombian Andes (Fig. 3). Several other characters of flower and fruit were eventually discovered, which correlated well with the seasonally dry to moist forest ecology of western Ecuador.

KEY TO *CAPPARIS BONIFAZIANA* AND *C. MACROPHYLLA*

- 1a. Episepalous glands 5–8 mm wide, showy and exposed by divergent to reflexed sepals; stamens 35 to 71; anthers 4.5–5.3 mm; ovary 5–8 mm; petals 19–29 mm, divergent to suberect at anthesis; fruit indehiscent. Leaf blades oblong-elliptic to oblong-lanceolate, rarely lanceolate or oblanceolate; endemic (except for one isolated collection from central Peru) to the southern half of Ecuador on the western side of the Andes, in seasonally dry to moist or *garúa* (fog) forests, from the lowlands to 850 m *C. bonifaziana*
- 1b. Episepalous glands 2.5–4 mm wide, inconspicuous and hidden by the divergent to ascending sepals; stamens 80 to 130; anthers 6–7 mm; ovary 8–11 mm; petals 27–40 mm, reflexed at anthesis; fruit tardily dehiscent by 3 to 4, thin, flexible coriaceous exocarp segments. Leaf blades widely elliptic to ovate-elliptic or sometimes suborbicular; in moist to wet forests of the tropical valleys to the submontane zone of the Venezuelan and Col-

ombian Andes, and in the low-elevation, wet, evergreen, tropical Amazonian rain forests, from southern Colombia and eastern Ecuador and Peru to Amazonas and Acre states of western Brazil, just east of the Andes *C. macrophylla*

With *Capparis macrophylla* s. str., now more narrowly defined, the newly segregated Ecuadorian endemic is in need of a name. Because its best and most complete specimens were co-collected by Dra. Carmen Bonifaz (b. 1956), Universidad de Guayaquil Herbarium director and a long-time sophisticated student of the western Ecuadorian flora, we are most pleased to name this species in her honor.

- 1. *Capparis bonifaziana* X. Cornejo & Iltis, sp. nov.** TYPE: Ecuador. Los Ríos Prov.: Hcda. Clementina, Puerta Negra, en "Tecal" contiguo, bosque húmedo tropical, 79°21'W, 1°40'S, 80 m, 9 Oct. 2003 (fl, fr), X. Cornejo & C. Bonifaz 7812 (holotype, GUAY; isotypes, AAU, BM, COL, K, LOJA, MO, NY, QCA, QCNE [2], US [2], USM, WIS [7]). Figures 1, 2, 4, 5.

Haec species *Cappari macrophyllae* affinis, a qua differt foliis plerumque oblongo-ellipticis vel oblongo-lanceolatis; petalis 19–29 × 9–17 mm, erectis vel divergentibus; staminibus 35–71; glandulis nectariis crassis, 5–8 mm latis; antheris et ovarii minoribus.

Treelet or tree 3–25 m tall, to 25 cm or more DBH, unbuttressed, glabrous throughout; new branches with orbicular to linear lenticels 0.2–4 mm; stipules narrowly triangular, 1–1.8 × 0.5–0.8 mm. Leaves evergreen, spirally disposed, ca. 5 to 10 spread out near the end of current year's and/or last year's growth, with petioles and leaf blades of different lengths and sizes intermixed; petioles 0.3–15(–24) cm long; pulvinus (2–)4–12 mm, dark brown (dry); leaf blades ± coriaceous, oblong-elliptic to oblong-lanceolate, rarely lanceolate or oblanceolate, 6–45 × 3–15(–20) cm, the apex acuminate to acute or rounded and apiculate, the base rounded or obtuse to cuneate, dark green above, pale green beneath, with (7–)9–12(–15) prominent main lateral veins on each side of the midrib; leaf margin not retuse at insertion above the pulvinus, and only rarely slightly decurrent (Fig. 2). Inflorescences terminal or subterminal, erect, ebracteate racemes; peduncles ± naked, up to 21 cm long and 8 mm thick, the terminal flower-bearing portion of the axis ca. 3–12 cm long, 9- to 25-flowered; pedicels (2–)3–4(–5) cm, each subtended by a minute, caducous, triangular to linear bract and two persistent minute triangular stipules; calyx 4-parted, to 15 mm across, tip to tip; sepals ascending to somewhat reflexed at anthesis, broadly deltoid to se-

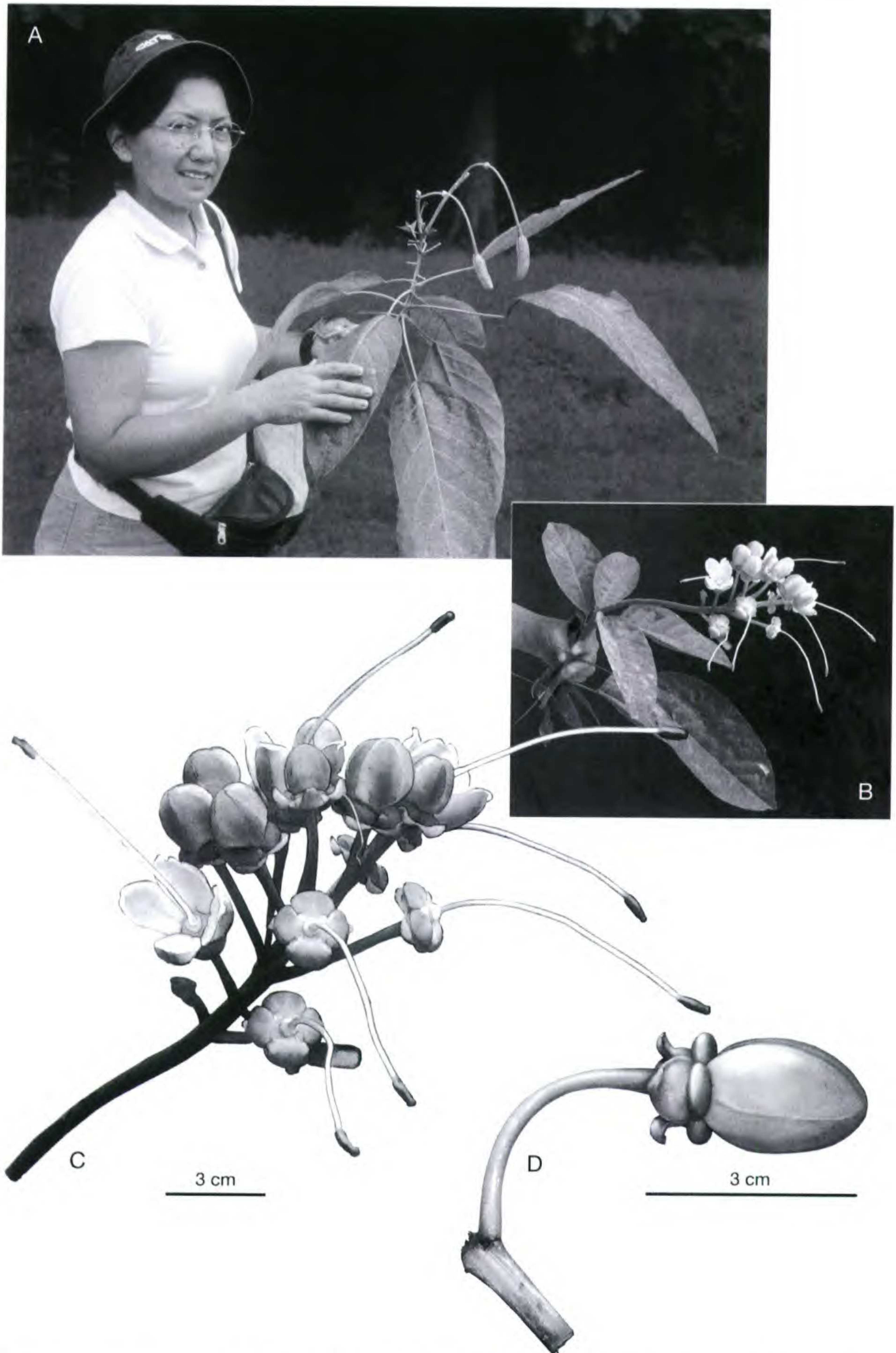


Figure 4. *Capparis bonifaziana*.—A. Carmen Bonifaz holding an immature fruiting branch of the type specimen. — B. Flowering branch, with buds and post-anthesis flowers with filaments abscised, showing the strongly ascendent petals, large glands and ovaries on elongated gynophores. —C. The same branch as in B, enlarged. —D. Flower bud just preceding anthesis.

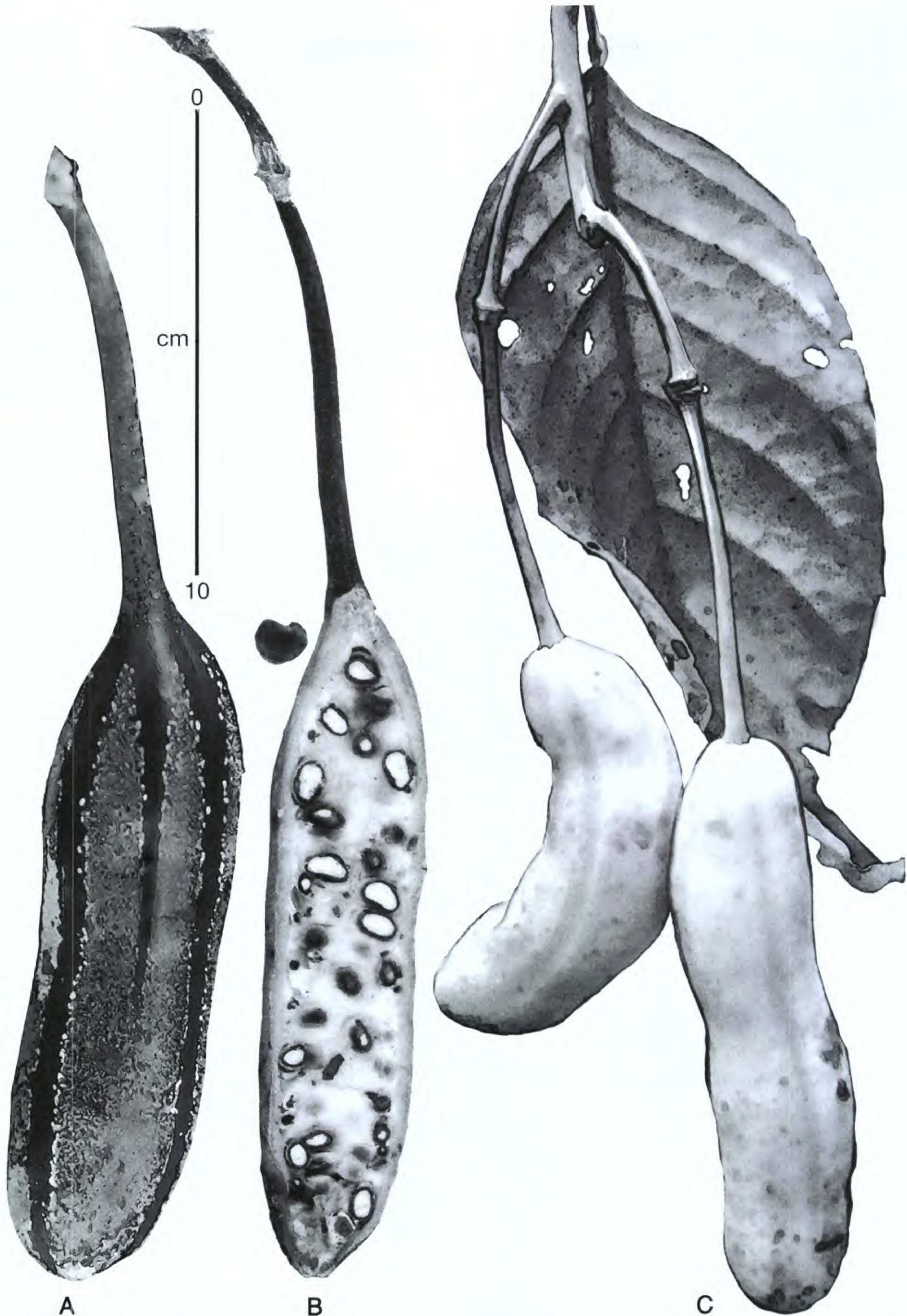


Figure 5. *Capparis bonifaziana*.—A. Nearly mature fruit with characteristic longitudinal stripes, reflecting the inner, parietal placentae. —B. Fruit in longitudinal section, showing the many seeds imbedded in a white, sweet, edible pulp. —C. Branch with two fruits and subtending leaf. A–C: type collection.

miorbicular, 4–6 × 5–9 mm, white to greenish white with white-hyaline, shallowly erose-ciliolate margins, each subtending and bearing on top of their inside base a conspicuous, relatively large (ca.

2–3 × 5–8 mm), white to pink or purple (when fresh, but drying black), episepalous gland that is fleshy, rounded, fat and cushion-shaped; flower buds just preceding anthesis obovoid, 15–25 × 18–

20 mm; petals stiff and erect to ascending or divergent, somewhat fleshy, forming a teacup-shaped corolla at anthesis, broadly ovate to elliptic, 19–29 × 9–17 mm, the apex broadly rounded and cucullate, the base subsessile by a minute peg inserted between, and inside of, the glands, greenish white without, cream to white within, the margin ± entire, minutely and irregularly erose-denticulate; stamens 35 to 71, filaments 5.5–8 cm long, anthers 4.5–5.3 mm, dorsifixed in the basal third; gynophore 6–8 cm, white; ovary 5–8 × ca. 2–3 mm, green, oblongoid to subcylindrical, sometimes longitudinally striate; stigma truncate to hemispherical, sessile. Fruits solitary or up to 6, clustered at the end of branches, pendent indehiscent and baccate, fleshy within, cylindrical or oblongoid, rarely ovoid, straight to somewhat curved (banana-shaped), 7–15 × 2–4 cm, when immature the exocarp green with four dark green stripes [“resembling a squash fruit,” *Steyermark 52706*], in immature herbarium material dark brown or purple-spotted with four black longitudinal stripes, at maturity yellow to orange, with 2 major and 2 minor longitudinal, grooved markings [Fig. 5; “bright yellow with faint red longitudinal lines,” *Neill 11446*], eventually turning soft, or thin and coriaceous, filled with a white pulp; gynophore 7–11 × 0.3–0.6 cm, bright yellow; pedicels 3–5(–6) cm; seeds ca. 25 to 60 per fruit, each surrounded by a white aril, irregularly beveled, somewhat flattened, 10–14 × 7–8 mm (but see below); testa brown or black, the cleft invagination narrow and very short (ca. 2 mm); embryo white, the cotyledons convoluted one into the other and around the radicle, with a thin layer of endosperm visible (in cross section) on the rounded back of the seed.

Habitat and distribution. Lowlands to the premontane, fog-enshrouded mountains of western Ecuador, from Esmeraldas south to Azuay, from dry to moist tropical and (rarely wet) premontane forests, often in secondary vegetation (usually all that is now left in western Ecuador), from near sea level (50 m) to 850 m; flowering and fruiting throughout the year.

Local names. Barniz (Spanish), *Quelal et al. 472* (Esmeraldas); Cacho de Venado (Spanish), *Cornejo & Bonifaz 5667* (Los Ríos); Guineo de montaña (Valverde et al., 1991); Maduro (Spanish), *Cornejo & Bonifaz 3884* (Manabí), *Cornejo & Bonifaz 1308* (Guayas, *Bonifaz & Cornejo, 2004*).

Uses. Fruits edible, *Cornejo & Bonifaz 3884, 4885, 5667, 7793; Bonifaz & Cornejo 3085* (Boni-

faz & Cornejo, 2004). Cultivated as living fences, *Alvarez & Tirado 1545*.

Biological interactions. The flowers, open from early evening until early next morning, are probably bat-pollinated, but this has as yet not been verified. During the day, flowers are visited by black bees (*Cornejo & Bonifaz 5307*) and at least five species of ants, each observed and collected on a different tree at the type locality (*Cornejo & Bonifaz 7812*).

Discussion. The vegetative differences between *Capparis bonifaziana* (Fig. 2) and *C. macrophylla* (Fig. 3) may be subtle. In addition to the overall leaf shape, *C. bonifaziana* has the blade margins inserted generally at right angles above the pulvinus, and only rarely decurrent onto the pulvinus, whereas *C. macrophylla* has leaves that are more often rounded or subcordate at the base, but then more abruptly decurrent onto the pulvinus.

Ecology. While label data tell us that *C. bonifaziana* grows in a wide range of forest types, from dry (but not very dry) to moist or even wet, associated species have never been mentioned. Here we now report two woody Capparaceae collected together with *C. bonifaziana* (*Cornejo & Bonifaz 7115*, in sched.) in remnant moist forests near Chone: *Capparis ecuadorica* Iltis (Iltis, 1978), a locally not uncommon Ecuadorian endemic shrub or treelet; and, in addition, wonder of wonders, the showy *Steriphoma urbani* Eggers (*Cornejo & Bonifaz 7350*, in sched.), a super-rare liana endemic to western Ecuador, here now at its only fourth known station, and the only white-flowered species in this small, highly specialized, otherwise orange- to red-flowered, hummingbird-pollinated genus. Its pollinating bats are yet to be discovered.

Detailed descriptions of the vegetation associated with *Capparis bonifaziana* may be found in *Flora del Bosque de Garúa de la Comuna Loma Alta, Provincia del Guayas, Ecuador* (*Bonifaz & Cornejo, 2004*), located in the Chongón-Colonche mountains northeast of Guayaquil. Here, the belt of dense, seasonally moist to wet, low-elevation (400–600 m) cloud forest is, like the hot super-dry coastal forests and deserts, the product of a peculiar climatic phenomenon characteristic of the west coast of Peru and Ecuador (as it is of the west coasts of South Africa and Australia), namely oceanic fog. Locally known as the *garúa*, and drifting inland from the frigid Pacific Ocean to the west, this fog of fine water droplets is the result of the chilling effects of the upwelled, cold coastal waters of the Antarctic Humboldt (or Peru) Current on the warm, moisture-

laden tropical westerlies. With its 20–30 m tall trees “milking” the clouds, such wet forests are characterized by abundant epiphytes, especially Araceae (*Anthurium* Schott, *Philodendron* Schott), Orchidaceae, Bromeliaceae, pteridophytes and mosses, and an occasional treelet of *C. bonifaziana*.

Although widespread, *Capparis bonifaziana* is relatively uncommon, the often solitary treelet or rare tree occurring in open, seasonally dry (but not very dry) to moist or even wet forests, and most often in secondary vegetation. The only exception to this rule was found at the type locality, where some 30 or more treelets were scattered in the understory of a teak or “teca” (*Tectona grandis* L. f.) plantation (a *tecal* in Spanish). This is perhaps not surprising, since most collections were made in disturbed forests or fields or intervening *arroyo* remnants. In fact, such treelets do well when planted as living fences (Alvarez & Tirado 1545).

Even though Los Ríos, wherein lies the type locality, is the province with both the most disturbed vegetation in all of Ecuador, with pastures and fields abutting giant plantations of bananas, and the most thoroughly studied flora of the country, with its *Flora of the Río Palenque Science Center* (Dodson & Gentry, 1978) and *La Flora de Jauneche* (Dodson et al., 1985), neither of which report a *Capparis* equivalent to *C. bonifaziana*, nevertheless its flora continues to yield botanical novelties. In these treasured forest remnants, much field exploration remains to be done before all the wild will be gone.

Finally, on the basis of geography alone, *Capparis bonifaziana* must be the remarkable species quoted below by the legendary, now much lamented taxonomist-ecologist, Alwyn H. Gentry (1945–1993), one of the second author’s former students, who at age 48, together with his friend and fellow bioexplorer, the famed ornithologist Theodore A. Parker III, met a most untimely death on the *garúa*-enshrouded slopes of the Chongón-Colonche mountains in a tragic airplane accident (Miller, 1996). In their thorough, book-length survey of Conservation International’s *Rapid Assessment Program* (RAP) on the *Status of Forest Remnants of the Cordillera de la Costa*, Gentry’s (1992: 38) discussion of the “Dry Forest” highlights, first, the remarkable widespread abundance and diversity of Capparaceae in coastal Ecuador, and second, the discovery of an astonishingly 25 m tall tree *Capparis* that he had never seen before. This is of interest, for despite the fact that some species of the *C. macrophylla* alliance are widespread and yet not commonly collected, and Gentry had as wide a floristic experience in northwestern South America (Gentry,

1993) as almost any botanist who ever worked there, this was, he thought, the first time that he ever encountered that *Capparis*, this surely a reflection in part of the enormous, complex, and localized biodiversity so characteristic of tropical floras. While Gentry evidently had both leaves and the “ripe banana-sized, striped fruits” in his hand, he did not collect that tree, strangely enough, perhaps awed by the difficulty of cutting it down, the magnificence of its stature, or its presence in a protected area, i.e., in a National Park. Nevertheless, apparently on the morning of that same day (18 Jan. 1991), he did collect (but did not recognize) a small treelet in both flower and fruit of this very same species (Gentry & Josse 72386) southwest of the small village of Guale on the Río Ayampe, and only ca. 3 km from that striking tall tree at Estero Manta Blanca:

“Although there are some local peculiarities [in Parque Nacional Machalilla], the dominant families in our dry forest sample from Estero Perro Muerto are Leguminosae and Bignoniaceae (7 spp. each), just as they are in essentially all Neotropical dry forest. A noteworthy family in this region is Capparidaceae, which mostly occurs in the very driest forest and may be more dominant here than anywhere else in the Neotropics. One striking *Capparis* (of which we found only a single tree) at Estero Manta Blanca is a large tree ca. 25 m tall, among the largest for this genus. Another interesting *Capparis* discovery is that the sometimes confused *C. heterophylla* and *C. ecuadorica* show strong ecological differentiation in areas where they are sympatric [this remains to be verified, for these two species often do occur together]. I have not previously seen the large-leaved *Capparis* with edible banana-sized, striped fruits that we found at Machalilla and it may be an undescribed species” (Gentry, 1992: 38).

How right he was!

Paratypes. ECUADOR. **Esmeraldas:** Chafllú, bosque húmedo tropical, X. Cornejo & C. Bonifaz 5307 (GB, GUAY, K, WIS); W of San Mateo, Res. For. Jardín Tropical, Univ. Téc. Luis Vargas Torres, A. Gentry & A. Lajones 73036 (MO, QCNE, WIS photocopy); Paraíso de Papagayos, Fund. Rescate de Animales Silvestres, km 2 vía Esmeraldas–Quinindé, J. Clark, L. Chatrou, P. Maas & C. Repetur 3799 (MO, QCNE, WIS [2]); Anchayacu, Eloy Alfaro, Mayronga, T. D. Pennington, R. Calero, M. Guevara, L. Zambrano, G. Rodríguez & L. Veloz 14552 (K, WIS [2]); Parroquia Alto Tambo, Finca del Sr. Calderón, a 2 km del sector El Cristal, en carretera, C. Quelal 472 (MO, WIS photocopy); Bilsa Biol. Stat., Mache mtns., 35 km W of Quinindé 5 km W of Santa Isabel, premontane wet forest, Monkey Bone trail, J. Clark & B. Adnepos 76 (MO, QCNE, WIS [2]), J. Clark, L. Chatrou, C. Repetur & P. Maas 3805 (MO, QCNE, WIS [2]). **Manabí:** Río Plata, ca. 50 km

NNE de Chone, remanente de bosque húmedo tropical, X. Cornejo & C. Bonifaz 7115 (GUAY, WIS); km 12 vía Chone–Sto. Domingo, 1 km atrás de la Universidad Católica, bosque húmedo tropical, X. Cornejo & C. Bonifaz 7350 (GUAY, QCNE, WIS [2]); 31 km N of Pedernales along new coastal hwy., ca. 2 km S of Río Mache, D. Neill & QCNE botany interns 11388 (QCNE, WIS photocopy); 30 km S of Pedernales on coastal highway, primary forest on hills, 2 km from seashore, D. Neill & QCNE botany interns 11293 (GUAY, MO, QCNE, WIS); 34 km N of Pedernales along new coastal hwy., near village of Chindul, D. Neill & QCNE botany interns 11446 (GUAY, MO, QCNE, WIS); Parque Nac. Machalilla, San Sebastián, X. Cornejo & C. Bonifaz 3884 (GUAY, K, WIS), C. Hernández 260 (QCA); Sector entre la Bola de Oro y La Mocora, C. Hernández 191 (QCA). **Guayas:** Guale, bosque seco tropical, X. Cornejo & C. Bonifaz 1308 (GUAY, WIS); valley of Río Ayampe, border w/Manabí, SW of Guale, A. Gentry & C. Josse 72386 (MO, QCNE, WIS); Cordillera Chongón-Colonche, comuna Olón, X. Cornejo & C. Bonifaz 2821 (GUAY, WIS); Río California, bosque seco, C. Bonifaz & X. Cornejo 3085 (GUAY, WIS). **Los Ríos:** Represa Daule Peripa, El Barro, Boca de Pescadillo, C. Bonifaz 516 (GUAY, MO, WIS); La Puntilla, X. Cornejo & C. Bonifaz 5667 (GUAY, WIS); Hcda. Clementina, en tecal, bosque húmedo tropical, X. Cornejo & C. Bonifaz 4885 (GUAY, K, WIS), X. Cornejo & C. Bonifaz 7793 (GUAY, WIS); cerro Samama, near Puerta Negra, mainly disturbed secondary forest (very common), B. Ståhl & X. Cornejo 5828 (GB, GUAY, WIS [2]); above Río Mombe, ca. 38 km NE of Babahoyo, B. Ståhl & J. Knudsen 1179 (GB, WIS photocopy). **Cañar/Azuay:** Hcda. Yubay, at Sanaguin, on S side of Río Patul, J. Steyermark 52706 (NY); comuna de Manta Real, al sur de la carretera La Troncal–Zhud, camino entre Zhucay y el Río Patul, margen izquierda del Río Patul, bosque húmedo premontano, A. Alvarez & M. Tirado 1545 (MO, QCNE, WIS). **Azuay:** 5 km SE of La Troncal on road to Zhud, beginning of track to Zhucay, G. P. Lewis & P. Lozano 2897 (QCA, QCNE, WIS); La Conferencia y Santa Cruz, Parroquia Molleturo, L. Ortiz 132 (QCA, QCNE). **PERU. San Martín-Loreto:** high area above Río Aguaytia, W bank 10 km below Aguaytia, small tree with paw-paw [*Asimina triloba*, Annonaceae, an edible-fruited common treelet of eastern North America]-like fruits, 4 July 1959 (fr), M. Mathias & D. Taylor 3580 (MO, WIS photocopy).

This solitary collection from southern Amazonian Peru, at the far southern end of San Martín province and close to Tingo María, has large elliptic leaves and fruits exactly like those of *Capparis bonifaziana*, and may represent that species otherwise endemic to western Ecuador. Since this station is disjunct by fully 600 km and close to the stations of *C. macrophylla* (Froehner 407), we included this collection here somewhat reluctantly. Of course, such disjunction may be attributed to avian long-distance dispersal, a situation not unknown considering that these fleshy fruits evolved for animal consumption and dispersal. On the other hand, with the fruits of this species eaten by people even now, and undoubtedly by “indígenas” some several thousands of years ago, at the time of the Incas and

before, there is always the possibility that some horticulturally-inclined persons took seeds or cuttings and transported them to their new home to enjoy these tasty fruits yet another day. Though the great distance and different climatic regime would seem to preclude such a scenario, as would an unlikely long-distance avian dispersal, we surely cannot discount these possibilities completely.

2. *Capparis macrophylla* Kunth, in HBK, Nov. Gen. Sp. 5: 91. 1821. *Capparidastrum macrophyllum* (Kunth) Hutchinson, Gen. Fl. Pl. 2: 310. 1967. TYPE: Colombia. [Bolívar]: “Crescit ad Río Viejo in ripa Magdalenae fluminis, inter Badillas [Badillo] et Bojorque [Bohórquez],” May 1802 (fl), Humboldt & Bonpland 1568 (holotype [one leaf and one flower], P [F neg. 34627, WIS photo]; isotype [two leaves], P, WIS photocopy). Figures 1, 3.

According to Dugand (1941: 40; 1955: 108), a pioneer scholar of tropical American *Capparis*, “El sitio llamado ‘Río Viejo’ por Humboldt y Bonpland se halla cerca de San Pablo, abajo de Puerto Wilches, a 7°30’ de latitud norte. Badillo se encuentra a 7°57’, y Bohórquez a 7°18’ precisamente frente a Puerto Wilches.”

Capparis iltisiana T. Ruíz, Ernstia 36: 1–2. 1986. TYPE: Venezuela. Edo. Falcón: Dto. Acosta, Mun. Jacura, Cerro La Mina de Riecito, bosque submontano húmedo, selva siempreverde con afloramientos rocosos, 500 m, T. Ruíz & F. Rondón 3789 (holotype, MY; isotypes, F [2], MY, VEN, WIS).

Shrub “with scandent branches” (“*Frutex ramis scandentibus*. . .” [Kunth, 1821: 91], this character probably based on a mistaken perception) to tree 15 m or more high and 15 cm or more DBH, with terminal branches glabrous, the lenticels prominent, orbicular to linear, 0.2–2 mm (cf. Dugand, 1955: 109), stipules ca. 1.7 mm long, narrowly triangular. Leaves evergreen, spiral, with petioles and blades of different lengths and sizes clustered near the ends of the branches; petioles (4–)8–30 × 0.1–0.3 cm; pulvini 3–24 mm long, dark brown, usually glabrous; leaf blades widely elliptic to ovate-elliptic or sometimes suborbicular, (2–)10–59 × (5–)10–34 cm, with apex acute to usually abruptly acuminate or rounded and apiculate, at base broadly obtuse to rounded and frequently shortly decurrent onto the petiole, (sub)coriaceous, dark green above with midvein and secondaries impressed to prominent, glabrous, paler green beneath with all veins prominent, with 9 to 13(to 15) main lateral veins on each side of the midrib. Inflorescences erect, terminal, ebracteate racemes, the stout peduncles 7–24 cm

long, with the flower-bearing portion 6–18 cm long, corymbiform, with ca. 7 to 14 flowers, each subtended by a minute, subulate, caducous bract ca. 1.5×0.7 mm, and laterally by 2 persistent minute triangular stipules, glandular with short (less than 0.1 mm), dense, colorless, uniseriate trichomes, the stout pedicels 2–6(–10) cm. Flowers greenish or white, with flower buds just before anthesis ovoid to oblongoid, 2.5–4 cm long; calyx 4-parted, in two inconspicuously imbricate series; sepals broadly deltoid, ca. $5\text{--}11 \times 6\text{--}10\text{--}15$ mm, erect to somewhat divergent at anthesis, with rounded apex, greenish, with shallowly and irregularly denticulate to erose glandular margins, externally glabrous, subtending and hiding a ring of four inconspicuous episepalous, fleshy, glabrous glands ca. $1 \times 2.5\text{--}4$ mm; petals white, elliptic, $27\text{--}40 \times 16\text{--}18\text{--}25$ mm, inserted between and inside of the glands, divergent to reflexed at anthesis, white or cream to greenish without, fleshy, longitudinally inconspicuously nerved, with margins entire to denticulate; stamens 80 to 130, filaments 5.5–10 cm, white, the anthers 6–7 mm, linear, dorsifixed in basal one third; ovary 8–11 \times 2 mm, oblong to elliptic, glabrous, 3- to 4-angled, unilocular but appearing falsely 3- to 4-locular by the intrusion of 3 to 4 parietal placentae (Ruíz-Zapata, 1986), the stigma hemispherical, sessile; gynophore 7–10 cm long. Fruits pendent, fleshy, baccate [*bacca corticata*; Jackson, 1928 (reprinted 1949)], ellipsoid to oblongoid, $(4\text{--})6\text{--}14 \times 2\text{--}4\text{--}6$ cm, externally yellow, glabrous, with (3 to)4 external, longitudinal, vascular markings or grooves (2 strong, 2 weak, reflecting the 4 parietal placentae inside), at maturity often tardily partway dehiscent from the tip, with the 3 to 4 thin, flexible coriaceous exocarp segments (i.e., valves) separating and recurving at full maturity (Ruíz-Zapata, 1985; *Schunke & Graham SI4806*) to expose the fleshy interior; gynophore in fruit $(3\text{--})8\text{--}14 \times 0.2\text{--}0.4\text{--}0.6$ cm; pedicels 4–7(–11) cm long; seeds ca. 25 to 65 per fruit, ca. $10\text{--}12 \times 6\text{--}9$ mm, immersed in a white to ivory fleshy pulp/aril, i.e., “Frutos...dehiscentes en 4 valvas, mostrando las semillas embebidas en masa cremosa de naturaleza arilar” (Ruíz-Zapata, 1985; 104–111); embryo white to cream, the cotyledons folded one into the other and around the radicle.

Habitat and distribution. In moist to wet, evergreen lowland forests of tropical inter-Andean valleys to premontane slopes of the northern Andes of Venezuela (150–1000 m) and Colombia (50–400 m), and in western Amazonia in a narrow zone on the wet, eastern side of the Andes, from southern Colombia (30 m) through eastern Ecuador (200–

300 m) and Peru (200 m) to Amazonas and Acre states (100–300 m) of southwestern Brazil; flowering and fruiting more or less throughout the year.

Local name. Ecuador: “Bus su bara” (Siona; fide Reinaldo Lucitande), *Vickers 82* (Sucumbíos).

Discussion. The location of the type was specified by Dugand (1941; 1955: 108–110), who in addition gave a detailed Latin description of the two *Romero-Castañeda* (2054, 2055) collections, which we have not seen, yet which were not only collected close to the type locality but also according to their detailed morphological description undoubtedly refer to *Capparis macrophylla*. The taxonomic problems with *C. macrophylla* were partially discussed in our introduction. The type description was based in part on Bonpland’s field notes, as mentioned, and only three leaves and one dissected flower survive in the Paris Herbarium. Its claim that it came from a “shrub with scandent branches” seems to be an error. Careful descriptions of *C. macrophylla* are found in Dugand (1955) and Ruíz-Zapata (1986). A beautiful illustration is found among the unpublished Mutis plates (No. 9 of *Capparis*) in the Madrid Herbarium and another with Ruíz-Zapata’s exceptionally careful description of *C. iltisiana* (Ruíz-Zapata, 1986).

Except for Colombia (and even here), this is a rarely collected species, widely dispersed in highly isolated populations, some of which perhaps will eventually deserve taxonomic recognition once more material is available.

Additional specimens examined. VENEZUELA. **Edo. Falcón:** Dto. Silva, hacienda El Carmen, 20 km al O de Tucacas, A. Cardoso & R. Wingfield 188 (CORO); Dto. Acosta, Cerro de La Mina, c. Riecito, Mun. Jacura, bosque submontano húmedo, L. Ruíz 641 (MER, MY); ca. 2 km al ENE del P. N. Cueva de la quebrada El Toro, cerca del origen del Río Paray, R. Wingfield & R. Smith 8808 (CORO); Dto. Federación, carr. La Taza a la est. del P. N. Cueva de la quebrada El Toro, T. Ruíz & M. Ruíz 4158 (MY); Par. Nac. La Cueva de la quebrada El Toro, a la entrada de la cueva, T. Ruíz, R. Parra & N. Mariño 4058 (MY). COLOMBIA. **Antioquia:** Segovia, E. Rentería 2305 (HUA, JAUM, NY, WIS photocopy); Santa Catalina, G. Bossé 8674 (LE, MO, WIS photocopy). **Cundinamarca:** Tocayma [Tocaima], M. Goudot s.n. [9?] (P, WIS photocopy). **Nariño:** Costa del Pacífico, corr. de Herrera, cuenca del Río Mira, c. Candelillas, J. Idrovo & H. Weber 1420e (COL, WIS). **Putumayo:** Río San Miguel o Sucumbíos, Santa Rosa y los alrededores, R. Schultes 3618 (GH, WIS photocopy). **Santander:** 10 leguas al S.E. de Barranca Bermeja, a 3 km de la margen izquierda del río Opon, terrenos bajos inundables, *Romero-Castañeda 5054, 5055* (COL, HUA not seen, fide Dugand, 1955). ECUADOR. **Sucumbíos:** Río Aguarico, Shushufindi, W. Vickers 82 (F, WIS photocopy); San Pablo de Los Secoyas, path W-SW, L. Brandbyge, E. Asanza, L. Werling, S. Leth-Nissen & F. Larrea 33310 (AAU, QCA, WIS); Est. exp.

Payamino INIAP, Reserva Florística El Chuncho, *J. Jaramillo* 8363 (QCA). PERU. **Amazonas:** Huambisa, valle del Río Santiago, ca. 65 km N de Pinglo, quebrada Caterpiza, 2–3 km atrás de la com. Caterpiza, *V. Huashikat* 464, 1283 (MO, WIS), *S. Tunqui* 91 (MO, WIS photocopy). **Ucayali:** Prov. Coronel Portillo, Bosque Nac. Alexander von Humboldt, Pucallpa–Tingo María rd, carr. de extracción, *Ch. Froehner* 407 (MO, WIS photocopy); Prov. Purús, Río la Novia, margen derecha del caserío de la com. San José, *J. Schunke* & *J. Graham* S14806 (WIS [3]). **Madre de Dios:** Prov. Manu, Par. Nac. Manu, Río Manu, Río Cumerjali, *R. Foster* & *B. d'Achille* 12002 (F, WIS [2]). BRAZIL. **Acre:** Río Acre, Seringal Auristella, *E. Ule* 9409 (G, K, MG, WIS fragm.); B[au]m, im Seringal S. Francisco, *E. Ule* 9410 (G, K, MG, WIS photo); near mouth of Río Macauhan (tributary of Río Yaco), on terra firme, *B. Krukoff* 5788 (A, GH, NY, WIS).

Acknowledgments. We thank first of all Carmen Bonifaz, fellow botanist and to the first author long-time field companion in the forests of western Ecuador, who helped initiate the taxonomic concept of *Capparis bonifaziana* as a separate species; Alicia Lourteig, the former herbarium curator of the Muséum National d'Histoire Naturelle in Paris, France, for photocopies of the type of *C. macrophylla*; Rosa Rankin for helpful comments; Ted Cochrane for the very careful reading of the manuscript; Lupita Sánchez for whetting the text to perfection; and finally, the ever helpful Kandis Elliot, artist of the UW Botany Department, for the expert and inspired illustrations.

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